

PANOV, N.A., prof.; DEYEVA, M.M.

X-ray picture of changes in the pulmonary circulation in rheumatic disorders of the mitral valve in children. *Pediatrics* 37 no.8:67-72 Ag '59. (MIRA 13:1)

1. Iz rentgenologicheskogo otdela (nauchnyy rukovoditel' - prof. N.A. Panov) Nauchno-issledovatel'skogo pediatricheskogo instituta Ministerstva zdravookhraneniya RSFSR (dir. - kand.med.nauk A.P. Chernikova).

(RHEUMATIC HEART DISEASE, pathology)

(BLOOD CIRCULATION, physiology)

DEYEVA, M. M., CAND MED SCI, "ROENTGENOLOGICAL PICTURE OF
MITRAL VALVE INSUFFICIENCY IN CHILDREN WITH RHEUMATISM." Mos-
COW, 1961. (SECOND MOSCOW STATE MED INST IMENI N. I. PIROGOV).
(KL-DV, 11-61, 227).

--248--

DEYEVA, M.M.

Clinical and X-ray parallels in rheumatic defect and insufficiency
of the mitral valve in children. *Pediatrics* no.1:63-67 '62.
(MIRA 15:1)

1. Iz rentgenologicheskogo otdela (nauchnyy rukovoditel' - prof.
N.A. Panov) Nauchno-issledovatel'skogo pediatricheskogo instituta
(dir. - doktor med.nauk A.N. Chernikova) Ministerstva zdravookhra-
neniya RSFSR.

(MITRAL VALVE--DISEASES) (RHEUMATIC HEART DISEASE)

DEYEVA, M.M.; DOGEL', N.V.; KAGANOV, S.Yu.; LEONT'YEV, V.Ya.

Late results of the hospitalization of children with chronic nonspecific pulmonary diseases in sanatoria on the southern Crimean shore. *Pediatrics* 41 no.9:57-62 S '62. (MIRA 15:12)

1. Iz kliniki dlya detey starshego vozrasta (zav. S.Yu. Kaganov) Gosudarstvennogo nauchno-issledovatel'skogo pediatricheskogo instituta (dir. - kand.med.nauk V.P.Spirina) Ministerstva zdravookhraneniya RSFSR.

(LUNGS--DISEASES)

(CRIMEA--HEALTH RESORTS, WATERING-PLACES, ETC.)

SHUBON, F.M., DEYEVA, N.M.

Biological characteristics of meadow rescue and blue hybrid
alfalfa grown on coal ashes in experiment pots. Zap. Sverd.
otb. VBO no.3:121-127 '64 (NIRA 7812)

DEYEVA, R A.

PHASE I BOOK EXPLOITATION SOV/4700

Moscow. Gosudarstvennyy okeanograficheskiy institut

Tablitsy prilivov; vody Aziatskoy chasti SSSR i privileyushchikh zarubezhnykh rayonov; ch. 1: Prilivy v osnovnykh portakh; ch. 2: Popravki dlya dopolnitel'nykh punktov i garmonicheskiye postoyannyye prilivov (Tide Tables; Waters of Asiatic USSR and Adjacent Foreign Regions; Pt. 1: Tides in the Principal Ports; Pt. 2: Corrections for Additional Stations and Harmonic Constants of Tides) Leningrad, Gidrometeoizdat, 1960. 191 p. 8,175 copies printed.

Sponsoring Agencies: Glavnoye upravleniye gidrometeorologicheskoy sluzhby pri Sovete Ministrov SSSR; Gosudarstvennyy okeanograficheskiy institut.

Resp. Eds.: R.A. Deyeva, Candidate of Geographical Sciences, and N.I. Chalyshneva, Candidate of Geographical Sciences; Eds.: I.N. Moiseyev and Z.I. Mironenko; Tech. Ed.: M.I. Braynina.

Card ~~1/10~~

Tide Tables (Cont.)

SOV/4700

PURPOSE: The book is intended for oceanographers and navigators.

COVERAGE: This is the second of a 3-volume work on Tide Tables published by the State Oceanographic Institute. Volume 1 contains Tide Tables for the waters of European USSR and adjacent foreign regions, while Volume 3 contains data for waters of foreign countries. The present volume gives Tide Tables for waters of Asiatic USSR and adjacent foreign regions. It contains information on tidal conditions in 18 main ports (Part I) and 157 additional stations (Part II). These Tables differ from those previously published in that they give data on the time and height of tides in main ports in the form of constant characteristics related to two astronomic parameters. Formerly, Tide Tables were calculated only for a specific date of each year and became obsolete the following year. The table of incoming astronomical data in this work for the period from 1960 to 1966 does show yearly changes. Tide Tables for the main ports have been computed on the basis of long-period observations of the sea level and have taken into account precalculated data for the previous years. The following persons collaborated in the work:

Card 2/10

Tide Tables (Cont.)

SOV/4700

A.I. Duvanin, Doctor of Geographical Sciences; M.P. Vin'kov, Section Head in the Vychislitel'nyy tsentr mekhaniko-matematicheskogo fakulteta Moskovskogo gosudarstvennogo universiteta (Computing Center of the Department of Mechanics and Mathematics, Moscow State University); N.I. Chalysheva, Candidate of Geographical Sciences; K.N. Soloveychik of the DVNIGMI (Far East Hydrometeorological Science and Research Institute); and R.A. Deyeva, Candidate of Geographical Sciences. There are no references.

TABLE OF CONTENTS:

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Content and Correlation Between Separate Parts of Tide Tables	4
Effect of Hydrometeorological Conditions on Tides	5
Time, According to Which Data on Tides Are Determined	5
On the Height of Tidal Levels in Tide Tables	5
Card 3 /10	

FAYNSHTYN, B.B., DEYEVA, R.I., PCHELINA, O.I., MALYSHKINA, M.

Improving the method for producing biomycin hydrochloride
(chlortetracycline). Med. prom. 12 no.7:46-47 J1 '58 (MIRA 11:8)

1. Moskovskiy khimiko-farmatsevticheskiy zavod imeni Karpova.
(AUREOMYGIN)

DEYEVA, T.A.

Significance of the vitamins of green aquatic vegetation in
rearing young-of-the-year carp. Trudy AzNIIRKH no.6:179-188
1963. (MIRA 17:8)

MANUKOV, Nikolay Pavlovich; PESTRYAKOV, A.I., red.; DEYEVA, V.M.,
tekhn. red.

[New trends in the repair of machines and tractors] Novoe
v remonte mashinno-traktornogo parka. Izd.2., perer. i dop.
Moskva, Sel'khozizdat, 1963. 471 p. (MIRA 17:1)

MEYEVA, V. P.

"Effectiveness of Various Methods of Utilizing Boron and Manganese in Cultivating Edible Tubers on Meadow-Podzolic Soils." Cand Agr Sci, All-Union Sci-Res Inst of Fertilizers Agricultural Engineering and Soil Sci, Acad Agricultural Sci imeni V. I. Lenin, Leningrad, 1954. (KL, No 2, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)
SO: Sum. No. 598, 29 Jul 55

DEYEVA, V.P., agronom.

Microelements in vegetable gardening. Nauka i zhizn' 21 no.11:31 N '54.

(MLRA 7:12)

(Fertilizers and manures) (Plants, Effect of minerals on)

DEYEVA, V.P.

USSR / Cultivated Plants, Potatoes, Vegetables, Melons.

M

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34695

Author : Deyeva, V.P.

Inst : AS LatvSSR

Title : Effect of Boron and Manganese on Crops of Table Vegetables (From Plants with Edible Roots) in Lime-Enriched Sod-Podzolic Soils.

Orig Pub : V. sb.: Mikroelementy v s.kh. i meditsine, Riga, AN LatvSSR, 1956, 417-424.

Abstract : Experiments conducted during 1952-1954 with table beets of the variety Bordeaux and carrots of the variety Nantes at the Experimental Station of the Leningrad Branch of BIUA and by the sovkhoses of the Leningradskaya Oblast, grown in sod-podzolic sandy loam soil with increased acidity (pH 4.5), have shown that spreading of B

Card 1/4

USSR / Cultivated Plants. Potatoes. Vegetables. Melons.

11

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34695

(1.5 kg/h) on the lime base (5 t CaCO_3 per hectare) produced higher crop of carrots (plus 29 hwt/h) than in lime-free soil (plus 16 hwt/h). Increase of crop in beets was twice as high on the lime-free background. Spreading of Mn produced the largest increase in beet and carrot crops (17 hwt/h each) in lime-free and moderately acid soil, as compared to lime-enriched soil (beets - +14, carrots - +11 hwt/h). Over a background of small amounts of lime (3 hwt/h CaCO_3), spread into the rows, the effect of B proved higher (carrot - +22%, beet - +15.5%), than that of Mn (+8.1 and 10.6% respectively). Moistening of seeds of these vegetables for 24 hours in solutions of 0.10% H_3BO_3 or of 0.2% MnSO_4 increased the crops of the carrots. This

Card 2/4

63

USSR / Cultivated Plants. Potatoes. Vegetables. Melons.

M

Abs Jour : Ref Zhur - Biol., No 8, 1958 No 34695

This moistening was carried out in the vernalization stage of the carrots; that of the beet seeds was accomplished 6 to 7 days prior to sowing. Sprinkling of plants, done three times in August, every 10 days, with solutions of 0.2% H_3BO_3 or of 0.4% $MnSO_4$, at a rate of liquid absorption of 600 l/h, also increased considerably the beet crop (+31-32 hwt/h), as well as the crop of carrots (+27-33 hwt/h.) to the extent that the soil acidity decreases, its content in water soluble Mn also diminishes, and at the same time, the intake of Mn by the plant decreases as well. With further growth development, the overall content of Mn increases in the leaves, and decreases in the roots. Likewise, the presence of B and Mn in the leaves

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USSR / Cultivated Plants, Potatoes, Vegetables, Melons.

11

Abs Jour : Ref Zhur - Biol., No 8, 1958, No 34695

accelerates the synthesis and increases the amount of protein and carbohydrates, thus promoting a rich flowing of protein and carbohydrates from the leaves to the roots. B and C contribute to the development of carotene in the roots of the carrot. -- A. P. Shcherbakov.

Card4/4

L 2027-66 EWT(1)/EWT(m)/EWA(b)-2 RO

ACC NR: AP5024150

UR/0250/65/009/009/0610/0612

AUTHOR: Deyeva, V. P.; Mashtakov, S. M.

TITLE: Adenosine triphosphate, nucleic acids and protein level changes in plants under the effect of 2,4-D and some trace elements

SOURCE: AN BSSR. Doklady, v. 9, no. 9, 1965, 610-612

TOPIC TAGS: plant chemistry, plant metabolism, plant sensibility, boron, zinc, nucleic acid, protein, herbicide

ABSTRACT: The article reports a study of these processes under the effect of the herbicide 2,4-D, alone or mixed with traces of boron and zinc, conducted on two hybrid varieties of corn, one resistant and the other sensitive to 2,4-D. Changes in levels of the three substances were determined in sections of the root ends and the whole third leaf in the initial developmental stage. At that time, the plant was left to soak for 24 hrs in a 2,4-D solution with or without either or both of the trace elements. Under the effect of the herbicide, ATP synthesis declined by 29% in the resistant variety and by 46% in the sensitive variety. Similar ATP decrease also appeared in the leaves. The trace elements, particularly zinc, considerably impeded this reduction so that ATP levels in the resistant variety approximated that of controls. The nucleic acid level increased in both roots and leaves, since its

Card 1/2

L 2027-66

ACC NR: AP5024150

conversion into protein could not be accomplished, and decreased almost to control values upon addition of the trace elements. Protein synthesis decreased by 21-11.5% under the 2,4-D effect, and the trace elements, particularly zinc, led to its increase approximately to control values. The trace elements thus led to reestablishment of the plants' energy balance. Orig. art. has: 3 tables.

ASSOCIATION: Institut eksperimental'noy botaniki i mikrobiologii AN BSSR (Institute of Experimental Botany and Microbiology, AN BSSR) 4455

SUBMITTED: 14Jan65

ENCL: 00

SUB CODE: LS

NR REF SOV: 006

OTHER: 008

Card 2/2

DEYEVA, V. YE.

62/49T52

USSR/Medicine - Pectin Decomposition Jul/Aug 49
Medicine - Biochemistry

"Two-Phase Fermentative Decomposition of Pectin,"
N. V. Novotel'nov, V. Ye. Deyeva, Chair of Micro-
biol and Biochem, Leningrad Inst of Refrig and
Dairy Ind, 5 $\frac{1}{2}$ pp

"Biokhim" Vol XIV, No 4, pp 311-316.

Study of decomposition of pectin by pectinase
prepared from *Aspergillus niger* indicated there
are at least two phases in the process. First is
characterized by a sudden decrease in viscosity
with a very small increase in the reducing sub-
stances due to the esterase effect on the pectin
62/49T52

USSR/Medicine - Pectin Decomposition Jul/Aug 49
(Cont'd)

molecule, and is accompanied by cleavage of the
neuron complex. "Pectolic" acid, liberated by
the cleavage, reacted with a hydrolytic agent is
decomposed at the glycoside bonds. Reducing sub-
stances are increased, and d-galacturonic acid is
the final product. Submitted 27 Oct 48.

62/49T52

DEYEVA, V. YE

USSR/Medicine - Vitamin C Pectin

Sep/Oct 49

"Use of a Fermentive Method to Obtain P-Factor Enriched Vitamin C Concentrate," N. V. Novotel'nov, B. Ye Deyeva, Chair of Microbiol and Biol, Leningrad Inst of Refrigeration and Milk Ind, 7 pp

"Biokhim" XIV, No 5, pp 398-404.

From chemical standpoint, hydrolytic disintegration of pectine obtained from dog rose represents complex system of related reactions. Due to severe maceration of plant cell, there is intensified release of blocked ascorbic acid. Pectine matter in dog rose contains large quantity of substances, polyphenolic in nature, which react on process of pectolysis with freed carbonic complexes. Glucosides--substances which are always present in the reaction--have P-vitamin activity. These substances are better than ordinary purified alcohol concentrates. Submitted 27 Oct. 48

Fdd

PA 157T59

DEYEVA, V. Ye.

Chem Effect of pH and the oxidation-reduction potential on alcohol fermentation. A. M. Mulkov, V. E. Deyeva, and O. I. Kryachkova. *Trois, Leningrad, Tekhn. Inst. Pishchev. Prom. S. 103-108 (1953). Zhur. Khim. 1953, No. 3087.*—A high oxidation-reduction potential (I) of the medium contributes to a lowering of the yield of alc. Thus, all the factors which contribute to a high I are undesirable; among these are lowering of pH of the mash and its aeration. An interrelation was found between the pH and the I of the mash and the yeast as well as an almost direct relation between the I of the fermenting medium and the intensity of yeast breathing. In the production of alc. the preferred pH was found to be 5.0-5.5. M. Hosh

DEYEVA, V. Ye.

DEYEVA, W. Ye.: "Seeking out ways of reducing losses of dry grain matter in producing malt". Leningrad, 1955. Min Higher Education USSR. Leningrad Technological Inst. of the Food Industry. (Dissertations for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya letopis', No. 52, 24 December, 1955. Moscow.

MALKOV, A.M.; DEYEVA, V.Ye.

Effect of orthophosphate on the amylolytic activity of the fungus
Aspergillus oryzae. *Izv.vys.ucheb.zav.;pishch.tekh.no.5:68-71*
'60. (MIRA 13:12)

1. Leningradskiy tekhnologicheskii institut pishchevoy promy-
shlennosti. Kafedra tekhnologii brodil'nykh proizvodstv.
(*Aspergillus oryzae*) (Potassium phosphate)

MALKOV, A.M.; DEYEVA, V.Ye.

Effect of sodium fluoride on the breathing, synthesis of biomass,
and amylolytic activity of *Aspergillus oryzae*. Izv. vys. ucheb.
zav.; pishch. tekhn. no.2:57-60 '60. (MIRA 14:7)

1. Leningradskiy tekhnologicheskii institut pishchevoy
promyshlennosti, kafedra tekhnologii brodil'nykh proizvodstv.
(*Aspergillus oryzae*)
(Sodium fluoride)

MALKOV, A.M.; DEYEVA, V.Ye.

Influence of a partial inhibition of respiration in *Aspergillus oryzae* on the synthesis of a biomass, the amount of P_7 and on the aminolytic activity. Mikrobiologiya 30 no.2:229-235 Mr-Apr '61.
(MIRA 14:6)

1. Leningradskiy tekhnologicheskij institut pishchevoy promyshlennosti.

(*ASPERGILLUS ORYZAE*)

MALKOV, A.M.; DEYEVA, V.Ye.; TKACHEVA, G.A.

Effect of potassium phosphate and sodium fluoride on the synthesis
of the biomass and the amylolytic activity of *Bac. subtilis*.
Mikrobiologiya 31 no.6:990-994 N-D '62. (MIRA 16:3)

1. Leningradskiy institut sovetskoy trgovli imeni F. Engel'sa.
(POTASSIUM PHOSPHATES) (SODIUM FLUORIDES)
(BACTERIA, AEROBIC)

BOGDANOV, N.I.; DEYEVA, Ye.G.; TEL'NOV, M.A., red.; KHAT'KOVA, Ye.S.,
red.izd-va; PARAKHINA, N.L., tekhn.red.

[Manual of prices for overhauling machinery and equipment used
in lumbering] Sbornik optovykh tsen kapital'nogo remonta mashin
i mekhanizmov, primenyaemykh na lesosagotovkakh. Moskva, Gos-
lesbumizdat, 1960. 120 p. (MIRA 13:6)

1. Tsentral'noye byuro tekhnicheskoy informatsii lesnoy pro-
myshlennosti.
(Lumbering--Machinery)

VAKHMISTROVA, M.P. Prinimali uchastiye: DRYEVA, Z.N.; YAKOVLEVA, A.F.
CHEZHIK, F., otv. za vypusk

[Reclamation of virgin and waste lands in Kazakhstan; bibliography]
Osvoenie tselinnykh i salezhnykh zemel' Kazakhstana; ukazatel'
literatury. Alma-Ata, 1959. 162 p.

(MIRA 13:11)

1. Alma-Ata. Gosudarstvennaya respublikanskaya biblioteka.
(Bibliography--Kazakhstan--Reclamation of land)

DEYEVA, Z.V.

AID P - 4955

Subject : USSR/Engineering

Card 1/1 Pub. 110-a - 4/21

Authors : Bulgakova, N. V., Z. V. Deyeva, and A. M. Prokhorova, Engineers.

Title : Thermal and chemical tests of a high-pressure once-through boiler fed by salt-free water.

Periodical : Teploenergetika, 8, 17-18, Ag 1956

Abstract : Tests with the above boilers, performed in the All-Union Heat Engineering Institute in February-March 1956, are described. The results of these tests show that the quality of the salt-free water is not worse than the quality of the condensate, and that accordingly the steam supplied by a boiler fed by salt-free water is equal in quality to the steam from a boiler using condensate.

Institution : All-Union Heat Engineering Institute

Submitted : No date

DEYENVA, Z.V., Cand Tech Sci—(disc) "Study of basic factors which
determine the vapor purity of a ~~steam~~ ^(continuously operating coil) boiler of supercritical
pressure." Mos, 1958. 19 pp, incl cover (Min of ~~Electrostations~~ ^{Electric Power Stations} USSR.
All-Union Order of Labor and Banner ~~Heat~~ ^{Heat} Engineering Sci Res Inst
in F.E. Dzerzhinskiy), 120 copies (KI, 48-58, 104)

-38-

ДЕЯЕВА, З.В.

ДЕЯЕВА, З.В., инж.; КОТ, А.А., канд.техн.наук.

Solubility of sodium chloride in superheated steam. Elek.sta.
29 no.1:14-16 Ja '58. (MIRA 11:2)
(Salt) (Steam)

DEYEVA, Z.V.

BULGAKOVA, N.V., inzh.; DEYEVA, Z.V., inzh.; KOT, A.A., kand. tekhn. nauk; RAKOV, K.A.
kand. tekhn. nauk

Using chemically desalted feed water in high-pressure and super-
pressure once-through boilers. Elek. sta. 29 no. 3:8-12 Mr '58.
(Feed water) (MIRA 11:5)

8 (6)

SOV/91-59-11-19/27

AUTHORS: Kot, A.A., Candidate of Technical Sciences, and
~~Dzyeva, Z.V.~~, Engineer

TITLE: The Purity of Steam Entering a Turbine

PERIODICAL: Energetik, 1959, Nr 11, pp 28-30 (USSR)

ABSTRACT: The authors determined the permissible quantities of SiO_2 and Na_2SO_4 in steam entering a turbine. At a steam pressure of 125 atmospheres and a temperature of 480°C , the SiO_2 content of steam must not exceed 0.01-0.015 mg/kg, while the Na_2SO_4 content must not be higher than 0.04-0.06 mg/kg. The SiO_2 content was determined by a FEK-M photocalorimeter, whose accuracy must be taken into consideration. The authors mention the experimental work of the Vodnoye otdeleniye VTI (Water Department of VTI) concerning the investigation of scale on turbine blades, which was performed in 1958. In 1957, VTI and MO TsKTI established in a joint work that the salt content of steam is composed basically of sodium salts. The data of the authors confirm the data obtained by VTI

Card 1/2

SOV/91-59-11-19/27

The Purity of Steam Entering a Turbine

and TsKTI from a SVK-150 turbine of the Cherepets GRES.
There are 2 tables and 1 Soviet reference.

Card 2/2

KOT, A.A., kand.tekhn.nauk; DEYEVA, Z.V., kand.tekhn.nauk

Concerning the derived transition zone of once-through boilers
with super-high and supercritical pressures. Elek.sta. 33
no.12:6-9 D '62. (MIRA 16:4)

(Boilers)

DEYGEN, M. F.

PA 19.49T88

USSR/Physics

Sep/Oct 48

Polarons

Light - Absorption

"Some Optic Properties of Polarons and Color Centers,"
M. F. Deygen, Phys Inst, Acad Sci Ukrainian SSR,
3 3/4 pp

"Iz Ak Nauk SSSR, Ser Fiz" Vol XII, No 5, pp 646-64.

Treats subject under: (1) absorption of light by
polarons, (2) absorption of light by F-centers (color
centers), (3) comparison with experimental results,
and (4) conclusions.

19/49T88

USSR/Physics

Crystallography
Quantum Mechanics

Jun 48

"Quantum States and Optical Transitions of Electrons
in Polarons and the Color Centers of Crystals," S. I.
Pekar, M. F. Deygen, Kiev State U, Inst of Phys,
Acad Sci Ukrainian SSR, 6 pp

"Zhur Ekspier i Teoret Fiz" Vol XVIII, No 6,
pp 401-486.

Studies polarons and electrons, antilocalized in
ideal ion crystals and color centers in alkali-
halide crystals, using as sample one previously de-
veloped by authors. Energy levels, ψ functions of

USSR/Physics (Contd)

6/49795

Jun 48

the electron, and oscillator strength of optical
transitions were calculated.

6/49795

PA 6/49795

PA 9/49T96

USSR/Physics

Crystals - Color
Crystals - Photoelectric Properties

Sep 48

"The Theory of Internal Photoelectric Effect in
Polarons and Centers of Coloring," M. F. Deygen,
Kiev State U, 7 pp

"Zhur Ekspert 1, Teoret Fiz" Vol XVIII, No 9,
pp 818-824.

Considers internal photoelectric effect on polarons
and centers of coloring (F-centers). Derives wave
functions of continuous spectrum of polaron. Calcu-
lates relation of probability of photoelectric
effect on polarons to frequency of light, and

9/49T96

USSR/Physics (Contd)

Sep 48

Qualitative relation of probability of photoelectric
effect to frequency of light in cases of F-centers.
Demonstrates disadvantage of identifying F-absorp-
tion curves as absorption curves by appropriate
conversions of electrons directly in a continuous
spectrum.

9/49T96

DEYGEN, M.F.

Light absorption by polarons and by color centers. Nauk.
zap. Kiev. un. 9 no.2:21-39 '50. (MLRA 9:12)

(Absorption of light) (Crystallography, Mathematical)
(Electrons)

DEYGEN, M. F.

189T84

USSR/Physics - Crystallography, Jul 51
Conduction Electron

"States of a Conduction Electron in an Ideal
Homeopolar Crystal," M. F. Deygen, S. I.
Pekar, Phys Inst, Acad Sci Ukrainian SSR
"Zhur Eksper i Teoret Fiz" Vol XXI, No 7, pp
803-808

Studies possibility of elastic local deforma-
tion of crystal by fld of an electron and
stationary location of electron close to de-
formation. Shows that such a self-conformal
local electron state does not exist in the

LC

189T84

USSR/Physics - Crystallography, Jul 51
Conduction Electron (Contd)

crystal-continuum approximation, but exists in
more detailed (atomic) model of a crystal, if
a suitable crit inequality is satisfied. In
last case self-localized state is more favor-
able for energy than free state of electron in
the zone of conduction. Submitted 24 Jun 50.

LC

189T84

DEYGEN, M. F.

USSR/Physics - Crystallography

Sep 51

"Energy of Thermal Dissociation and Ground State of Double Color Center in Ionic Crystals," M. F. Deygen, Phys Inst, Acad Sci Ukrainian SSR

PA 193794

"Zhur Ekeper 1 Teoret Fiz" Vol XXI, No 9, pp 992-1000

Discusses behavior of 2 closely located color centers in ionic crystals from quantum-mech standpoint. Interaction of centers leads to formation of new system of double centers. Analyzes thermal disson energy and parameters of ground state of

LC

193794

USSR/Physics - Crystallography (Contd)

Sep 51

double centers. Deduces thermal dependence of comen of centers and computes numerical values. Deygen thanks Prof S. I. Pekar for advice. Submitted 28 Sep 50.

LC

193794

CA

Electronic Optics
3

Relation between the frequency of the maximum of the

absorption band of color centers and the lattice constant in alkali halide crystals. M. P. Delgen (Phys. Inst. Acad. Sci., Ukr. S.S.R., Kiev). *Zh. Eksp. Teor. Fiz.* 22, 120-7 (1952). --If the width ΔE of the forbidden zone is identified with the half width of the descending red branch of the short-wave absorption max., it is found that for NaCl, KCl, RbCl, NaBr, KBr, RbBr, NaI, KI, RbI, the ratio $h\nu/\Delta E$ (where ν = frequency of the max. of the absorption band of the color centers) varies only between 0.23 and 0.29. Consequently, it is legitimate to conclude that $h\nu/\Delta E = \gamma = \text{const.}$ This relation is even more general than the known relation $h\nu/d^2 = K$, where d = lattice const. The const. K can be evaluated, with the aid of a one-dimensional crystal model, by $\Delta E = (h^2/2m^*d^2)(\varphi^2 + \pi^2)$, where d_0 is the closest distance between pos. lattice points, and $\varphi = \arctan A/P$, with P characteristic of the electron band in the crystal, and A independent of P . In strongly bonded crystals P is large and φ close to $\pi/2$, hence $\varphi^2 + \pi^2 \approx 3\pi^2/4 = \text{const.}$, and $d_0 = qd$, where q depends on the type of structure. Hence, $K = h\nu/d^2 = 2(h^2/4m^*)(1/q^2)(\varphi^2 + \pi^2)$; for NaCl-type structures, $q^2 = 1/4$, and $K = 0.9 \times 10^{-10} \text{ erg-cm.}^2$, as against the exper. mean $K = 1.3 \times 10^{-10}$. For the CsCl type, $q^2 = 1$, and $K = 0.45 \times 10^{-10}$, exper. 0.31×10^{-10} . For CaF₂, $q^2 = 1/4$, $K = 0.9 \times 10^{-10}$, exper. 1.0×10^{-10} . N. Thon

DEYGEN, M.F.; LASHKAREV, V.Ye.

Transparency coefficient of semiconductor--metal contacts. Trudy
Inst.fiz. AN URSR no.4:3:10 '53. (MLRA 7:12)
(Semiconductors)

DEYGEN, M.P.; TOLPYGO, K.B.

Discussion on the zonal theory of solids. Trudy Geof.inst.
no.4:122-127 '53. (MLRA 7:12)
(Crystallography) (Solids)

DEYGEN, M.P.

~~Optical excitation of the double color center in ionic crystals.~~

Optical excitation of the double color center in ionic crystals.
Zhur. eksp. i teor. fiz. 24 no.6:631-642 Je '53. (MLBA 7:10)
(Crystallography)

DEYGEN, M.F.; TOLPYGO, K.B.

On S.V.Tiabl'kov's review of S.I.Pekar's book "Studies of the electron theory of crystals." Usp. fiz. nauk 51 no.3:426-428 N '53. (MLBA 6:12)
(Crystallography)

DEYGEN, M.F.

Magnetic properties of metal-ammonium solutions and balanced
concentration of local centers in dielectrics. Trudy Inst.fiz.
AN URSSR no.5:105-118 '54. (MLRA 7:12)
(Ammonium compounds--Magnetic properties) (Dielectrics)

DNYGEN, M.F.

Theory of the optical properties and electric conductivity of
metal-ammonium solutions. Trudy Inst. fiz. AN URSR no.5: 119-136
'54. (MLRA 7:12)

(Ammonium compounds)

USSR/ Physics

Card 1/2 Pub. 43 - 44/62

Authors : Deygen, M. F.

Title : ~~Optical characteristics of local electron centers in solid and liquid ion dielectrics~~
Optical characteristics of local electron centers in solid and liquid ion dielectrics

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 716-717, Nov-Dec 1954

Abstract : A quantum-mechanical system consisting of two closely situated and strongly reacting centers of a dye (so-called double center of a dye or F_2 -center) was investigated to determine the optical properties of the local electron centers. The parameters of the basic and excited states, the energy of thermal dissociation of the F_2 -center, the frequency of the F_2 -absorption band maximum, as well as the width of this band were calculated.

Institution : Acad. of So., Ukr. SSR, Phys. Inst.

Submitted :

Card 2/2 Pub. 43 - 44/62

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 716-717, Nov-Dec 1954

Abstract : It was established that the theory of local electron states makes it possible to determine the magnetic properties and the anomalies in the concentration-conductivity dependence for solid and liquid dielectrics. Sixteen references: 12 USSR and 4 USA (1943-1954).

USSR/Physics - Magnetic metal-ammonium

FD-1361

Deygen
Card 1/1 : Pub. 146-6/18

Author : Deygen, M. F.

Title : ~~Theory of the magnetic properties of metal-ammonium solutions~~
Theory of the magnetic properties of metal-ammonium solutions

Periodical : Zhur. eksp. i teor. fiz., 26, 293-299, Mar 1954

Abstract : On the basis of representations concerning local centers of electrons in an ionic dielectric (polarons, centers of coloration, and double centers of coloration) the author develops the theory of the magnetic properties of metal-ammonium solutions. He determines the equilibrium of concentration and the coefficients of magnetic susceptibility of local centers. He computes the coefficient of magnetic susceptibility of the solution as a function of temperature and concentration of metal atoms. The results of theory are found in agreement with experiment. Eleven references, 7 USSR (e.g. S. I. Pekar and M. F. Deygen, ZhETF, 18, 481, 1948).

Institution : Physics Institute, Acad. Sci. Ukrainian SSR

Submitted : July 14, 1953

USSR/Physics -- Metal-ammonium

DEYGEN

FD-1362

Card 1/1 : Pub. 146-7/18

Author : Deygen, M. F.

Title : ~~Optical properties and electrical conductivity of metal-ammonium solutions~~
Optical properties and electrical conductivity of metal-ammonium solutions

Periodical : Zhur. eksp. i teor. fiz., 26, 300-306, Mar 1954

Abstract : On the basis of the representation concerning local centers of electrons in an ionic dielectric (polarons, centers of coloration, and double centers of coloration) the author explains the peculiarities of the absorption spectra of light, and also the dependence of electrical conductivity and temperature coefficient of conduction upon the concentration of the metal in metal-ammonium solutions. He calculates the position of the maximum and the half-widths of the bands of light absorption by the polarons. Sixteen references, 9 USSR (e.g. M. A. Krivoglaz and S. I. Pekar, Trudy In-ta fiziki AN USSR (Works of the Physics Institute, Acad. Sci. Ukrainian SSR), 4, 37, 1953).

Institution : Physics Institute, Acad. Sci. Ukrainian SSR

Submitted : July 14, 1953

DEYGEN, M.F.

DEYGEN, M.F.

A spherically symmetrical case of bipolar diffusion of semiconductor current carriers in the presence of an external field; linear approximation. Zhur.tekh.fiz.25 no.6:1175-1181 J1'55. (MIRA 8:10)
(Semiconductors)

FD-3194

USSR/Physics - Semiconductors

DEYGEN / M. F.
Card 1/1 Pub. 153-3/28

Author : Deygen M. F.

Title : Dipole diffusion of current carriers in semiconductors in the case of spherical symmetry in presence of an exterior field (Linear approximation)

Periodical : Zhur. Tekh. Fiz., 25, No 7, 1175-1181, 1955

Abstract : Diffusion of current carriers in a mixed conductivity semiconductor was analyzed in linear approximation in the case of a spherically symmetrical exterior field. Space distribution of electron and hole concentration was determined. The type of control of excess conductivity different from a flat contact, was established. Indebted to Member of Acad. Sci. Ukrainian SSR V. Ye. Lashkarev. Six USSR references.

Institution :

Submitted : June 28, 1954

Distr: 4B4c

²
Polarized luminescence of colored crystals. V. L. Vinet-
skii and M. F. Isiger (Inst. Phys. Acad. Sci. U.S.S.R.,
Kiev). *Optika i Spektroskopiya* 4, 66 (1969). ⁴
The optical transitions during various excitation states of
 F_2^- and F_2^+ centers in phosphors have been analyzed. It
was shown that to each of those centers corresponded at
least 2 absorption bands of approx. the same intensity.
On the whole, the derived quantum-mech. interpretation
corresponded to the classical model proposed by Feofilov
(C.A. 48, 8665; 49, 16497k). A. P. Kotloby

DEYGEN, M. F.

USSR/Physical Chemistry - Crystals, B-5

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 60915

Author: Deygen, M. F., Pekar, S. I.

Institution: None

Title: Generalization of the Method of Effective Mass of Electron in the Case of Overlapping Zones and Several Interacting Conductivity - Electrons

Original

Periodical: Tr. In-ta fiziki AN SSSR, 1956, No 7, 108-115

Abstract: The method of effective mass is extended to the instance when 2 lowest zones of conductivity are substantially overlapping and bottom of second energy zone is close to bottom of conductivity zone. Moreover this method is generalized for the instance of several interacting conductivity electrons. Considered are characteristics of energy spectra of electrons of local centers in the case of overlapping zones.

Card 1/1

DEYGEN, M. F.

B-5

Category: USSR / Physical Chemistry - Crystals

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29745

Author : Deygen M. F.

Inst : not given

Title : Theory of Local States of Electron in Isotropic Homeopolar Crystal

Orig Pub: Zh. eksperim. i teor. fiziki, 1956, 31, No 3, 504-511

Abstract: Consideration of behavior of an electron localized in the vicinity of a defect in a non-metallic, homeopolar crystal, taking into account the "condenson" interaction of electron and crystal. The "condenson" state is meant to denote self-consistent state of electron localized at discrete level of potential well (region of increased density). Energy therms of the system are calculated and also the energy of thermal dissociation of electron, on quantum-mechanics treatment of electron motion and on classical and a quantum-mechanics treatment of the motion of electrons of the lattice. It is shown that condenson interaction leads to a difference between the energies of thermo- and photo-dissociation of electron. A determination has

Card : 1/2

-35-

Category: USSR / Physical chemistry - Crystals

B-5

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 29745

been made of the light absorption band of the localized electron (position of maximum, half-width of band and its temperature dependence). As an example are presented numerical calculations in the case of Coulomb potential of defect (for instance of an admixture atom with valency electron).

Card : 2/2

-36-

DEYGEN, M.F.

PRIKHOT'KO, A.F.

24(7)

3

PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universitet

Materialy I Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizichnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsterg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Pabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Korotkiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.A., Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S., A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Deygen, M.F. Theory of Light Absorption by Impurity Centers in Homeopolar Crystals	135
Deygen, M.F., and V.L. Vinetskiy. Optical Properties of I_2 -centers in Ionic Crystals	137
Rashba, E.I. Impurity Absorption in Molecular Crystals	140
Kate, M.L. Absorption Spectra of Some Solid Solutions and Their Change When Subjected to Hard Radiation	141
Grum-Grzhimaylo, S.V., B.N. Grechusnikov, and R.A. Kravchenko-Berezhenov. Vibrational Structure in the Absorption Spectra of Corundum Tinted With Vanadium (at 100°K)	144
Slavova, Ye. N. Spectrophotometric Study of Dye Impurities in Crystals of Lead and Barium Nitrites	146

DEYGEN, M.F.; DEMIDENKO, O.A.; CHKHARTISHVILI, Yu.B.

~~On the theory of F-centers in mixed crystals~~ [with summary in English]. Ukr.fiz.shur. 2 no.2 suppl:24-29. '57. (MLRA 10:7)

1. Institut fiziki AN URSR, Kiivs'kiy derzhavniy universitet i
Tbilis'kiy derzhavniy universitet.
(Crystallography, Mathematical)

DEYGEN, M.F.

AUTHOR: Deygen, M.F.

51-5-6/26

TITLE: On the Theory of Impurity Centres in Anisotropic Homopolar Crystals. (K teorii primesnykh tsentrov v anizotropnykh gomeopolyarnykh kristallakh)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol. 2, No. 5, pp. 587-591 (USSR)

ABSTRACT: This paper develops further an earlier theory of impurity atoms in isotropic homopolar crystals, taking into account the interaction of electrons with the acoustic vibrations of the lattice, using the so-called "condensed" coupling of the electrons with the vibrations. Ref.(5) gives the energies for thermo- and photo-dissociation of electrons, parameters of the quantum states of the system, position of the maximum and the half-width of the impurity absorption band, etc. Some of these results were repeated in Ref.(8). The theory given in this paper generalises the above results for the case of an anisotropic energy surface of a band electron. In this theory, the behaviour of band electrons is described by two effective masses μ_1 and μ_2 , taking into account the interactions of the electrons with the lattice vibrations.

The following parameters of the absorption band of the impurity.

Card 1/2

51-5-6/26

On the Theory of Impurity Centres in Anisotropic Homopolar Crystals.

atoms are calculated: position of the maximum of the band, magnitude and the temperature dependence of the half-width. Results of the calculations are compared with the experimental data for silicon. The calculated band half-width at the absolute zero was found to be 3×10^{-3} eV, while the experimental value for silicon at helium temperature [Ref.5] is 1.5×10^{-3} eV.

The author was assisted by two students of the Kishinev University, Fayersteyn and Vladesko.

There are 9 references, of which 6 are Slavic.

ASSOCIATION: Institute of Physics of the Ac.Sc. Ukrainian SSR, Kiyev.
(Institut Fiziki AN USSR, Kiyev.)

SUBMITTED: October 31, 1956.

AVAILABLE: Library of Congress.

Card 2/2

DEYGEN, M. F.

51-1-4/18

AUTHORS: Deygen, M. F. and Shul'man, L. A.

TITLE: On a Theory of Electron-spin Resonance of F-Centres in Ionic Crystals (Continuous Model of a F-Centre - "Smoothed Functions"). (K teorii spin-elektronnogo rezonansa na F-tsentrah v ionnykh kristallakh (Kontinual'naya model' F-tsentra - "sglazhennyye funktsii").

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.1, pp.21-28. (USSR)

ABSTRACT: A mathematical paper. It discusses in relativistic (Darwin's method) and non-relativistic (Pauli's method) approximations the interaction of a localized s-electron with the nuclear magnetic moment, displaced from the centre of symmetry of the electron wave-function. Hyperfine structure of the energy levels of the electron is obtained. Calculation is generalized to the case of interaction with several nuclear magnetic moments. The results obtained are used to discuss spin-resonance, absorption of radiowaves by F-centres using "smoothed" wave-functions of the electron and to estimate the

51-1-4/18
On a Theory of Electron-spin Resonance of F-Centres in Ionic Crystals.
maximum width of the absorption band. There are 12
references, 3 of which are Slavic.

ASSOCIATION: Institute of Physics of the Academy of Sciences of
the Ukrainian SSR, Kiyev; (Institut fiziki AN USSR,
Kiyev.) Tadzhik State University, Stalinabad.
(Tadzhikskiy gosudarstvennyy universitet, Stalinabad).

SUBMITTED: December 28, 1956.

AVAILABLE:

Card 2/2

DEYGEN, M. F.

Theory of local electronic states in an isotropic homopolar crystal. M. F. Deigen. Soviet Phys. JETP 4, 424-30 (1957) (English translation).—See CA: 51, 4123i. B. M. R.

PA - 2344

DEYGEN, M.F.

AUTHOR:
TITLE:

DEYGEN, M.F.

The Interaction of Localized Electrons with Acoustic Oscillations in Homoepolar Crystals (Vzaimodeystviye lokalizirovannykh elektronov s akusticheskimi kolebaniyami v gomeopolyarnykh kristallakh, Russian).
Izvestiia Akad. Nauk SSSR, Ser. Fiz., 1957, Vol 21, Nr 1, pp 68 - 68 (U.S.S.R.).
Received: 4 / 1957

PERIODICAL:

Reviewed: 5 / 1957

ABSTRACT:

This is a short summary of the lecture published in Zhurn. eksp. i teor. fiz., 1956, Vol 31, 34. Irrespective of the interaction mentioned in the title, it is not possible to assess the width of the absorption bands of local centres, the difference between the energies of thermal- and photodissociation etc.

The author studies the above mentioned interaction on the basis of the "mechanism of condensation", which consists essentially of the following: At any point of the crystal a domain of increased density and therefore with an increased dielectric constant is produced by elastic deformations. According to the theory of macroscopic electrostatics the electron is pulled into that domain. Therefore this compressed area represents a potential well for the electron, which does not follow the movements of the electron because of the inertia of the atoms.

Card 1/3

PA - 2344

The Interaction of Localized Electrons with Acoustic Oscillations in Homoeopolar crystals.

The Hamiltonian of this system is $H = -(\hbar^2/2\mu)\Delta + Q(r) + v(r) + \hat{H}_{ak}$. This was obtained by using the method of effective mass. $Q(r)$ denotes the energy of the electrons in the field of the defect, $\hat{H}_{ak}$ the Hamiltonian of the acoustic oscillations of the lattice, $V(r)$ the energy of the interaction of the electron with the deformed domain of the crystal (the energy of condensation interaction).

The solution of the Schrödinger equation corresponding to the above Hamiltonian determines the energy levels and the wavefunction of the system. The parameters of the 1s and the 2p levels and the energy of thermal dissociation of a localized electron have been calculated. In homoeopolar crystals absolute value of the energy of photodissociation is higher than the energy of thermal dissociation similar to the case in ion crystals.

Taking into consideration a note by S.I.Pekar and M.A. Krivoglaz it is possible, in addition, to determine the parameters of the absorption band of light influenced by atoms of admixed substances. Computations show that the half width of the ab-

Card 2/3

PA - 2344

The Interaction of Localized Electrons with Acoustic
Oscillations in Homopolar Crystals.

Absorption curve can be considerable even at absolute zero.
(No illustrations).

ASSOCIATION: Institute for Physics of the Academy of Science of the
Ukrainian SSR.

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress.

Card 3/3

AUTHORS: Deygen, M. F., Dykman, I. M., Tolpygo, K. B. 57-27-7-40/40

TITLE: ~~All-Union~~ Conference on the Theory of Semiconductors
(Vsesoyuznoye soveshchaniye po teorii poluprovodnikov).

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1957, Vol. 27, Nr 7,
pp. 1628-1642 (USSR)

ABSTRACT: The conference took place in ~~Kiyev~~ on October 9-13, 1956.
40 lectures were held. They comprised the following branches
of knowledge: multielectron-theory of the solid body,
exciton-processes in semiconductors, interaction between
current-carriers and lattice, theory of the polarons, theory
of the local states of the electron in semiconductors, zonal
structure of the semiconductors, magnetic properties of the
semiconductors, phenomenological theory of the semiconductors.
There are 16 references, 12 of which are Slavic.

SUBMITTED: December 30, 1956

AVAILABLE: Library of Congress

1. Conferences-Theory of semiconductors-Kiyev 2. Semiconductors-Theory

Card 1/1

6793. QUANTUM STATES AND OPTICAL TRANSITIONS OF
THE F_2 -CENTRE ELECTRON. M.F. Delgen and V.L. Vinetskii.
Zh. eksper. teor. Fiz., Vol. 32, No. 2, 389-98 (1957). In Russian.

A system consisting of two negative vacancies and an electron
in an ionic crystal (F_2 -centre) is considered. The thermal disso-
ciation and ground-state energies of the system are computed by
quantum-mechanical consideration of the motion of lattice ions. The
parameters of the optical absorption band — its position and half-
width — have been determined. For illustration the numerical values
have been obtained for KCl and KBr crystals and the results satis-
factorily agree with the experimental results.

A.
548.7

DEYGEN, M. F.

AUTHOR:
TITLE:

DEYGEN, M.F., VINETSKIY, V.L.

56-615/56

Interaction between Current Carriers and F-Centers and Acoustical Vibrations of Ionic Crystal Lattices. (Vzaimo~~o~~eystviye nositeley toka i F-tsentrov s akusticheskimi kolebaniyami resnetki v ionnykh kristallakh, Russian)

PERIODICAL:

Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 6, pp 1382-1392 (U.S.S.R.)

ABSTRACT:

Theoretically the influence exercised by a "surplus electron" in an ion crystal, the lattice of which was excited optically or acoustically, is investigated. The acoustical case leads to a decrease of the energy of the system, a change of the mass of the current carriers - polaron effect. - In consideration of the condensor effect the wave function, the energy of the ground- and excited states of the F-centers, and the parameters of the F-light absorption bands are calculated. (With 8 Slavic References).

ASSOCIATION:
PRESENTED BY:
SUBMITTED:
AVAILABLE:

Physical Institute of the Ukrainian Academy of Science

7.7.1956
Library of Congress

Card 1/1

DEYGEN, M.F.

56-3-32/59

AUTHOR: Deygen, M.F.

TITLE: Theory of the Paramagnetic Resonance of F-Centers in Ionic Crystals. (Teoriya paramagnitnogo rezonansa F-tsentrov v ionnykh kristallakh)

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 3, pp. 773-779 (USSR)

ABSTRACT: The theory of the hyperfine interaction between a localized electron and the magnetic nuclear moments shifted from the symmetry center of the wave function of the electron by a certain interval is developed. A hyperfine structure of the level of the electrons is obtained. Computations were carried out by means of the "homogeneous" and the "detailed" wave functions of the F-centers. The results make possible the development of a theory of the paramagnetic absorption of radiofrequency of the F-centers. It is applied to the form and the width of the absorption line in KCl and NaCl. For KCl and NaCl the half width of the absorption bands computed amounts to 8 and 13 Oe while for KCl 52 Oe were measured experimentally. Thus, it can be seen that the theory only gives the correct order of quantity. There are 4 Slavic references.

Card 1/2

Theory of the Paramagnetic Resonance of F-Centers in Ionic Crystals. 56-3-32/59

ASSOCIATION: Physics Institute AN of the Ukrainian SSR (Institut fiziki
Akademii nauk Ukrainiskoy SSR)

SUBMITTED: March 25, 1957.

AVAILABLE: Library of Congress

Card 2/2

DEYGEN, M.F. [Deyhen, M.F.]; ROYTSIN, A.B. [Roitsyn, O.B.]

Double paramagnetic resonance of incorporated atoms and F-centers in mixed crystals [with summary in English]. Ukr.fiz.zhur. 3 no.4:439-448
J1-Ag '58. (MIRA 11:12)

1. Institut fiziki AN USSR.
(Crystal lattices) (Color)

DEYGEN, M.F.

51-4 -1-8/26

AUTHORS: Vinetskiy, V. L. and Deygen, M. F.

TITLE: On Polarized Luminescence of Coloured Crystals.
(O polarizovannoy lyuminestsentsii okrashennykh
kristallov.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.1,
pp. 60-65. (USSR)

ABSTRACT: This paper is entirely theoretical. It discusses optical transitions to various excited states of F_2 and F_2^+ -centres. It is shown that intensity of phototransition to one of the higher energy levels in F_2 and F_2^+ -centres is comparable with the intensity of phototransitions (Refs.2,3) to the lower excited levels of the same centres. This means that F_2 and F_2^+ -centres may have two absorption bands of approximately the same intensity. The present authors
Card 1/3 discuss in detail Feofilov's work (Ref.4) on aggregate

51- 4-1-8/26

On Polarized Luminescence of Coloured Crystals.

colour centres. Feofilov studied the azimuthal dependence of the degree of polarization of light emitted in luminescence excited by polarized light of wavelengths corresponding to the colour centres. Feofilov gives a classical interpretation of his results based on absorbing and emitting oscillators. The present paper gives a quantum-mechanical interpretation of Feofilov's results. It is shown that the experimental data on the azimuthal dependence of the degree of polarization of luminescence agree with results calculated for F_2 and F_2^+ -centres. The discussion is based on the macroscopic approximation (Refs.2,3,5). Quantitative calculations were made for a KCl crystal. There are 1 figure and 10 references,

Card 2/3 of which 8 are Russian and 2 American.

On Polarized Luminescence of Coloured Crystals.

51- 4 -1-8/26

ASSOCIATION: Institute of Physics of the Academy of Sciences of
the USSR, Kiyev (Institut fiziki AN SSSR, Kiyev)

SUBMITTED: March 14, 1957.

AVAILABLE: Library of Congress.

1. Crystals-Luminescence-Polarization

Card 3/3

24(7)'

SOV/48-22-11-14/33

AUTHOR: Deygen, M. F.

TITLE: Paramagnetic Resonance of the Impurity Centers in Ionic Crystals
(Paramagnitnyy rezonans primesnykh tsentrov v ionnykh kristallakh)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol 22,
Nr 11, pp 1341-1346 (USSR)

ABSTRACT: In spite of the circumstance that spin-electron and spin-nucleus resonance methods have only for a short time been applied to the investigation of impurity centers in semiconductors, there has already been obtained a number of fundamental results. Theoretical work in this field is above all devoted to two problems: How to explain the nature of band widening in the spin-electron absorption curve of the F-centers in alkali-halide crystals (Ref 2) and how to compute the position of the lines of spin-electron resonance of the 5th group impurity atoms which are added to silicon (Ref 4). In the paper cited by reference 2 it was emphasized that only a rough orbital model of the F-center leads to a reasonable value of widening. The customary continuum model is said not to be in a position to explain this

Card 1/3

SOV/48-22-11-14/33

Paramagnetic Resonance of the Impurity Centers in Ionic Crystals

effect, leading to a divergence between theory and experiment of four orders of magnitude. This assertion was, however, refuted by the author in a previous paper (Ref 5). He proved that a correct application of the continuum model of the F-center yields reasonable results in the calculation of the width and of the shape of the absorption curve. Furthermore, in this paper some results from the theory of paramagnetic resonance are presented, which were obtained by the author and coworkers and which were published already in previous papers. Thus, the spin-Hamiltonian of the hyperfine interaction of the localized electron was studied (Refs 6,7). The theory of spin-electron resonance in F-centers and that of the dependence of the hyperfine structure of the F-center upon the orientation of the crystal in an external magnetic field are the subject matter of other papers (Refs 5-7, and 9). The spin-electron resonance in the stoichiometric metal excess in a NaCl type crystal is subjected to an investigation in reference 13. Finally, in reference 14 the hyperfine interaction and the spin-electron resonance in polarons and excitons is investigated. This paper presents a summary of the various previous papers, ~~inasmuch~~ as they are of

Cara 2/3

NOV/86-22-11-14/54

Paramagnetic Resonance of the Impurity Centers in Tonic Crystals

importance for the problem under review. There are 2 figures and 19 references, 12 of which are Soviet.

ORIGINATOR: Institut fiziki Akademii nauk USSR (Institute of Physics,
Moscow)

Card 5/5

AUTHORS:

Glinchuk, E. D., Deygen, M. F.

1987-22-2-1/53

TITLE:

Spin-Electron Resonance in the Stoichiometrical Excess of a Metal in NaCl-Type Crystals (Spin-elektronnyy rezonans v stekhiometricheskom izbytko metalla v kristallakh tipa NaCl)

PERIODICAL:

Zhurnal tekhnicheskoy fiziki, 1988, Vol 28, Nr 9, 1988-1990 (USSR)

ABSTRACT:

The theory of paramagnetic resonance developed in this paper covering this phenomenon in the stoichiometric excess atoms of a metal in the lattice of NaCl-type crystals permits to give a unique answer concerning the character of the P-center in the crystal. This method of investigating the paramagnetic resonance is a general one and can be applied to any kind of atoms occupying interstitial sites in lattices of different type. This paper contains a computation of the superfine structure of the energy levels of a valence electron of the metal atom which occupies an interstitial site in a lattice of the NaCl-type. The contour, the width, and the intensity of the band of spin-electron resonance in the stoichiometrical excess metal atoms is determined (the paramagnetic resonance in the P-center of the model by Gil'sh and Pol'). This paper covers a quantitative investigation of the paramagnetic re-

Card 1/5

601/57-2-9-11/58

Spin-Electron Resonance in the Stoichiometrical Excess of a Metal in NaCl-Type Crystals

sonance of the M -atoms occupying interstitial sites in NaCl. The sample problem furnishes quantitative results. Qualitatively the results found in this paper differ considerably from the corresponding ones for the M -center obtained from the model by De-Bur. This permits **estimating** the **appropriateness** of the model of the M -center in various crystals according to the contour of the band of paramagnetic resonance. From the formulas derived (10) and (20) and using the table given in this paper it is possible to construct all spectral lines and to determine the shape of the absorption curve. Particular features of the absorption bands are indicated. There are 1 figure, 2 tables, and 13 references, 8 of which are Soviet.

ASSOCIATION: Institut Fiziki AN USSR, Kiev (Institute of Physics, AN USSR, Kiev)

Card 3/3

SOV/56-34-3-22/55

AUTHORS: Deygen, M.P., Pekar, S. I.

TITLE: Hyperfine Interaction and Spin-Electron Resonance in Polarons and Excitons (Sverkh-tonkoye vzaimodeystviye i spin-elektronnyy rezonans v polyaronakh i eksitonakh)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr. 3, pp. 684-687 (USSR)

ABSTRACT: The present paper shows that in polarons and excitons the correction of energy dependent on the hyperfine interaction in first approximation is equal to zero. First the operator of the energy of hyperfine interaction of an electron with the magnetic moments of the nuclei of the crystals is put down: $\hat{U} = \sum_l \hat{U}_l$; $\hat{U}_l = \frac{\mu \hbar \gamma_l}{5 I_l} \sum_{\vec{r}} (\vec{S}, \text{curl curl } \frac{I_l \vec{r}}{r^3})$

Here the index l enumerates the nuclei and U_l is the energy operator of the hyperfine interaction of an electron with the magnetic moments of the nuclei of the type l; $\vec{r}$ denotes the number of the node of the l-th sublattice; I_l and I_n and the spin of the nucleus and its modulus; μ denotes

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the Bohr magneton; μ_1 the magnetic moment of a nucleus; $r_{1\alpha}$ the distance from the 1α -nucleus to the electron. The operation curl is carried out in the coordinates of the electron. The Hamiltonian of the crystal may not contain the spins of the nuclei in zeroth approximation. Then the wave function of the crystal can be put down in form of the product of the wave function χ of the nuclear spins with the function $\psi(r, R)$ of the coordinates of all electrons (r) and the coordinates of progressive motion of the nuclei (R). The correction (first approximation of the energy) dependent on the hyperfine interaction is put down and the several times transformed: $U_e = \frac{e\mu_1}{5I_c} Q_\alpha P_\alpha$; $P_\alpha = \sum_i I_{\alpha z_i} P_1$ denoting the projection of the total spin moment of all nuclei of the ℓ -type of the crystal. P_1 is actually equal to zero on the average but in reality it slightly fluctuates. With increasing volume of the base region of the crystal U_1 and consequently also U tend to zero with $V^{-1/2}$. Therefore the hyperfine interaction does not furnish any broadening in the

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Polarons and Excitons

case of polarons and excitons, and this fact makes possible the experimental differentiation of polarons from local electron centers. Then the authors shortly report on several works dealing with the same subject. It would be interesting to find out why by illumination of the crystal such a high concentration of electrons can be produced that the spin - electronic absorption of radio waves by excitons can be determined experimentally. The excitons which absorbed a radion quantum have a much longer life with regard to fluorescence than the usual excitons. There are 5 references, 2 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk Ukrainskoy SSR (Institute for Physics AS Ukrainien SSR)

SUBMITTED: September 12, 1957

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AUTHORS: Deygen, M. F., Zevin, V. Ya. SOV/56-34-5-13/61

TITLE: The Dependence of the Hyperfine Structure of F-Centers on the Orientation of the Crystal in an External Magnetic Field
(Zavisimost' sverkh-tonkoy struktury F-tsentra ot oriyentatsii kristalla vo vneshnem magnitnom pole)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 5, pp. 1142-1147 (USSR)

ABSTRACT: Taking into account the results of previous papers, the authors find a general expression for the spin interaction between an F-center electron and the angular moments of the first and second coordinational spheres surrounding the nuclei by using the continuous and orbital models of F-centers in KCl type lattices. The investigation of the anisotropy of the coefficients of the spin Hamiltonian leads to a good consistency with the results obtained by G. Feher (Feyer)'s experiments. First, the explicit form of the spin Hamiltonian of the interaction of the localized electron in a crystal with the magnetic moment of the k-th nucleus of the lattice is given. The authors take into account the interaction with the nuclei of the first and second coordination spheres, as this inter-

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action is the most essential one. The form of the ψ -function depends on the model of the F-center. In the case of the continuous model (using the method of the effective mass and the approximation of strong coupling) one may write $\psi = \varphi(r) \sum_k c_k \psi_k(r_k)$ where $\varphi(r)$ denotes the wave function that is spherically symmetric with respect to the lattice defect. $\psi_k(r_k)$ denotes the atomic 4s-functions of K and Cl. The authors then give an explicit expression for the ψ -function taking into account the contribution of the first and of the second coordination spheres and also of the central ion Cl. This expression is specialized for the model of the F-center. The authors first investigate the hyperfine interaction of the F-center electron with one of the nuclei of the first coordinate sphere. The corresponding expression for H_k is given explicitly. The authors then derive the spin Hamiltonian of the hyperfine interaction of the F-center electron with the chlorine nucleus of the second coordinate sphere. Some differ-

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on the Orientation of the Crystal in an External Magnetic Field

ences between the results of this paper and those obtained by Feher (Feyer) are mentioned. There are 1 figure, 2 tables, and 10 references, 7 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk Ukrainskoy SSR (Institute of Physics, AS Ukr SSR)

SUBMITTED: November 10, 1957

1. Perturbation theory 2. Crystals--Magnetic factors 3. Crystals
--Lattices 4. Mathematics--Applications

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AUTHORS: Vinetskiy, V. L., Deygen, M. F. SOV/56-35-1-45/59

TITLE: On the Influence of Acoustic Vibrations on the Parameters of the Bands of the Absorption in Crystals Caused by Admixtures (O vliyani akusticheskikh kolebaniy na parametry polos primesnogo pogloshcheniya v kristallakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 35, Nr 1, pp. 287 - 289 (USSR)

ABSTRACT: In a previous paper (Ref 1) the authors investigated the system ionic crystal-F-center in a macroscopic approximation and they obtained expressions for the energies of the ground state and of the excited state of the system and also for the parameters of the corresponding absorption band. In this previous paper, the results of a paper by Tolpygo (Ref 2) were used for the calculations. In this paper by Tolpygo, the investigations were carried out in a microscopic approximation. But also a macroscopic investigation is possible for a wide group of crystals, the anisotropy of which is not too intensive. For the crystals which do not satisfy these conditions, numerical computations

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are necessary. The calculations are discussed step by step, and the formulae obtained are given explicitly. The approximation used in this paper may be applied also to the investigation of the behavior of the electron of an impurity center in homeopolar crystals. There are 2 references which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk USSR (Institute of Physics, AS UkrSSR)

SUBMITTED: April 1, 1958

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W
DEYGEN, M.F., Doc Phys Math Sci (diss) ⁱⁿ "Study ~~based on~~ the
theory of ~~the~~ local states of electrons in dielectrics and
semiconductors." Kiev, 1959, 15 pp (Acad Sci UkSSR. Inst of
Physics) 150 copies. Bibliography: pp 14-15 (51 titles)
(KL, 28-59, 122)

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DEY GEN, A. F.

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PHASE I BOOK REPRODUCTION

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Academy of Sciences of the Ukrainian SSR, Institute of Physics

Photoelectric and Optical Phenomena in Semiconductors (This book contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors, held in Kiev, 1957. The collection contains reports on the following topics: photoconductivity, photoelectric effect, photoemission, photoresistors, photoelectric cells and photoelectric tubes, the action of hard and corpuscular radiations, the properties of thin films and complex semiconductor systems, etc. The materials were prepared for publication by E. I. Rashkov, O. V. Saitko, M. B. Tolpygo, V. I. Luchenko, and M. K. Shymkhan. References and discussions follow each article.

Additional Sponsoring Agency: Academy of Sciences of the Ukrainian SSR, Presidium.

Editor: V. V. Kisina; Tech. Ed.: A. A. Matveychuk; Rep. Ed.: V. Ye. Lashkarev, Academician, Ukrainian SSR, Academy of Sciences.

PURPOSE: This book is intended for scientists in the field of semiconductor physics, solid state spectroscopy, and semiconductor devices. The collection will be useful to advanced students in universities and institutions of higher technical training specializing in the physics and technical application of semiconductors.

COVERAGE: The collection contains reports and information bulletins (the latter are indicated by asterisks) read at the First All-Union Conference on Optical and Photoelectric Phenomena in Semiconductors, held in Kiev, 1957. The collection contains reports on the following topics: photoconductivity, photoelectric effect, photoemission, photoresistors, photoelectric cells and photoelectric tubes, the action of hard and corpuscular radiations, the properties of thin films and complex semiconductor systems, etc. The materials were prepared for publication by E. I. Rashkov, O. V. Saitko, M. B. Tolpygo, V. I. Luchenko, and M. K. Shymkhan. References and discussions follow each article.

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Makovsky, T. V.	Investigation of the Recombination Process in Thermal Centers in Germanium	138
Ushakov, Yu. I.	Investigation of the Spectrum of Infra-red Ray Absorption by Minority Carriers in Germanium	141
Ushakov, Yu. I.	Investigation of the Modulation of the Optical Transparency of Germanium in the Region of a p-n Junction	146
Kolitsyn, M. I.	Improvement of the Photoelectric Method of Measuring the Length of Diffusion Displacement of Nonequilibrium Carriers in Semiconductors (Theses)	148

4. Other Semiconductors

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S/058/62/000/004/114/160
A061/A101

AUTHORS: Buymistrov, V. M., Deygen, M. F.

TITLE: Light absorption by impurities in germanium-type crystals (Theses)

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 41-42, abstract 4E361
(V sb. "Fotoelektr. i optich. yavleniya v poluprovodnikakh", Kiyev,
AN USSR, 1959, 137)

TEXT: A theory is developed, in macroscopic approximation, on light absorption by impurity atoms of group V in Ge-type crystals. The electron-phonon interaction is described by the deformation potential; the coupling constant in the interaction potential is assumed to be arbitrary. The anisotropy of the conduction band (the presence of two effective masses) is considered. In addition, the calculations take account of the existence of three lattice vibration branches with different angular dependences in the dispersion laws. The shape of the light absorption band during the transition of an electron of the impurity atom from the ground state to the excited state is obtained. The case of large heat liberation is considered. The results are applied to Ge and Si crystals. ✓B

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Light absorption by impurities ...

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The calculated half-width of the light absorption band fits the one obtained for Si experimentally.

[Abstracter's note: Complete translation]

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~~24(6), 24(7), 24(8)~~

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SOV/181-1-9-24/51

AUTHORS: Buymistrov, V. M., Deygen, M. F.

TITLE: On the Theory of Light Absorption by Impurities in Homeo-
 polar Crystals 7\

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1463 - 1465 (USSR)

ABSTRACT: The aim of the investigation under review was to set up
 criteria of applying the strong coupling method to the
 calculation of the parameters characterizing the shape of the
 light absorption band, in the case of absorption occurring by
 impurity atoms. The results of a number of pertinent
 publications are discussed in detail. The initial formulas
 used by the authors are taken from references 6, 7, and 10.
 The following criterion was obtained:

$$j_x < \frac{0.64 \cdot 3 \sqrt{\pi} \hbar \epsilon c_1}{2 \sqrt{2} e^2} = 5 \cdot 10^{-9} \epsilon c_1 \ll 1$$

$$j_x \equiv \left| \frac{a_x \hbar \omega_x}{c_x} \right| \ll 1; \omega_x \text{ denotes the frequency of the longi-}$$

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tudinal acoustic vibrations with the wave vector κ , ϵ is the dielectric constant of the crystal, c_1 is the longitudinal sound velocity, a is the constant of the deformation potential. It is shown that this condition is satisfied for silicon and germanium, and therefore, that the strong coupling method can be used for the calculation of the parameters. There are 11 references, 8 of which are Soviet.

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics of the AS UkrSSR, Kiyev)

SUBMITTED: March 27, 1959

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24(3)

AUTHORS:

Deygen, M. F., Roytsin, A. B.

SOV/56-36-1-24/62

TITLE:

The Paramagnetic Resonance of F-Centers in Static Magnetic Fields of Arbitrary Strength (Paramagnitnyy rezonans F-tsentrov v staticheskikh magnitnykh pol'yakh proizvol'noy velichiny)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 1, pp 176-185 (USSR)

ABSTRACT:

The authors develop a theory on the paramagnetic resonance of F-centers for an arbitrary value of the field strength of the external static field, and especially for the case in which such a field is lacking. The first part of the present paper deals with the hyperfine splitting up of energy levels of the F-center in the case of the presence of an external static magnetic field. First, the spin-Hamiltonian of the system to be developed is written down and transformed by separation of the terms of the Fermi type. For purposes of illustration, the calculation of the energy levels for alkali-halide crystals with a lattice of the NaCl type (halide salts of K, Na, Rb, Li) is carried out up to the determination of numerical values. The spins of the metal

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ion nuclei contained in these lattices are equal to $3/2$.
For the total spin of the sextuple of nuclei in the first
coordination-sphere the following values are obtained:

$$I = 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7 \quad 8 \quad 9$$

$$N = 34 \quad 90 \quad 120 \quad 120 \quad 96 \quad 64 \quad 35 \quad 15 \quad 5 \quad 1$$
 N determines the statistical weight of the quantum state
corresponding to a certain I -value. The papers dealing with
double paramagnetic resonance (Refs 9, 12, 13) permit
determination of the coupling constant of the spin Hamiltonian.
Also in very exact numerical computations the second term in
the Zeeman term of the aforementioned spin Hamiltonian can be
neglected. The total number of levels in the case under

$$\sum_{I=0}^9 2(2I+1) = 200.$$
The numerical
computations of the energy levels in the case of the existence
of an external electric field were carried out for the value
 $H = 50$ oersted. In the next chapter the quantum transitions
in the spectrum of hyperfine splitting up and the intensity of
the lines of paramagnetic resonance are calculated. For this

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purpose, an expression for the wave function of the system is at first written down. Inclusion of the perturbation taken into account by the aforementioned Hamiltonian eliminates degeneration completely and leads to the occurrence of 200 levels. The system of wave functions occurring herefrom is written down. Under the action of a radiofrequency field the transitions between the steady states of the systems, which were discussed in the preceding chapter, occur, and an expression for the solution of the corresponding time-dependent Schrödinger equation is written down. The results obtained by calculations are given by 2 diagrams. The next chapter deals with paramagnetic resonance in the case of a lacking field. Also in this case the intensity of the lines of paramagnetic resonance is, in the case of an arbitrary orientation of the external magnetic alternating field, determined by the product $J'N$, in which case $J' = (8I/3) (I + 1)/(2I + 1)$ holds. The results obtained by calculating the frequencies and intensities of the transitions of paramagnetic resonance in the case of a lacking external field are given by a diagram. These intensities are of the

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